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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/970,066	11/13/1997	PRADEEP K. DHAL	C-8232	2141

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POLAROID CORPORATION  
PATENT DEPARTMENT  
784 MEMORIAL DRIVE  
CAMBRIDGE, MA 02139

EXAMINER

ANGEBRANNDT, MARTIN J

ART UNIT

PAPER NUMBER

1756

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No. 08/970,066		Applicant(s) DHAL ET AL.	
Examiner Martin J Angebrannt		Art Unit 1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 October 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 28-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 28-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \*   c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

1 The response provided by the applicant has been read and given careful consideration.

The applicant is correct that prosecution estoppel does not apply, but has misnumbered the claims in thier presentation. Claims cannot be uncanceled and new claims must begin numbering after the last presented claim. The claims have been renumbered under 37 CFR 1.126 as 28-40. Please use this numbering when referring to the claims and ensure that the dependencies reflect this in future communications. Claims 1-14 have been canceled.

2 The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3 Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

"on eof" in claim 30 (originally numbered as 17) should read - - one of - - .

4 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5 Claims 28 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watt CA 995843.

Watt CA 995843 teaches in example 18 (page 33) a composition including a prepolymer of a diglycidyl ether of bisphenol A, Epoxy phenol novolak (polyfunctional epoxide 4/20-21), (3,4- epoxycyclohexyl) methyl- 3,4- epoxycyclohexane carboxylate, and allyl glycidyl ether

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mixed with p-chlorobenzenediazonium hexafluorophosphate to render it light sensitive. The addition of poly vinyl pyrrolidone is disclosed as inhibiting the premature gelation of the epoxy compositions (page 38/lines 22+)

It would have been obvious to one skilled in the art to add poly vinyl pyrrolidone to the composition of example 18 to inhibiting the premature gelation of the epoxy composition.

6 Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Watt CA 995843.

Watt CA 995843 teaches in example 3 (col. 10) a composition including a epoxide of bisphenol A and Epoxy cresol novolak (polyfunctional epoxide 4/20-21) mixed with stilbene cyclopentadienyl iron tosylate to render it light sensitive. The addition of a binder is disclosed as rendering the composition aqueous developable. (5/64-6/2)

It would have been obvious to one skilled in the art to add a binder to the composition of example 3 to render the composition aqueous developable

7 Claims 28-31 and 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. '846, in view of Keys et al. '567.

Sato et al. '846 teaches useful cationic polymerizable compounds (3/5-4/4) The use of compounds having a siloxane group increases, refractive index modulation. This includes compounds embraced by formula (I). The use of multiple epoxides is disclosed (3/45-48) Example 2 uses a cationically polymerizable siloxane compound, a free radiacally polymerizable compound, photoinitiators for each and a polymeric binder. (table 2, columns 9-10). The structure of the silicon containing cationically polymerable materials is disclosed in column 21 and is identical to the formula in claims 3

Keys et al. '567 teach that when more crosslinking is desired, the use of multi functional monomers in amounts up to 5% is a means to achieve this.

It would have been obvious to one skilled in the art to add other, multi functional epoxy monomers/oligomers, such as those disclosed by Sato et al. '846, to the composition of example

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1 of Sato et al. '846 and use them in forming a hologram based upon the direction to use more than one and that any cationically polymerizable compound(s) would be useful in the composition within Sato et al. '846 and the direction to the addition of polyfunctional monomers when increased crosslinking is desired in the holographic art by Keys et al. '567.

8 Claims 28-31 and 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dhal et al. WO/97/1318, in view of Ohe et al. '345 and Keys et al. '567.

Dhal et al. WO/97/1318 teaches the use of compositions including at least one monomer or oligomer capable of undergoing cationic photopolymerization. The use of any monomer capable of undergoing cationic polymerization is disclosed on pages 6 and 7. Useful photosensitizers and photoinitiators are disclosed on pages 5 and 7. Useful binders are disclosed on page 4.

Ohe et al. '345 teaches the use of cationically polymerizable materials which result in improved diffraction efficiency and superior environmental properties. Useful epoxides include those disclosed in columns 12-15.

Keys et al. '567 teach that when more crosslinking is desired, the use of multi functional monomers in amounts up to 5% is a means to achieve this.

It would have been obvious to one skilled in the art to add other, multi functional epoxy monomers/oligomers, such as those disclosed by Ohe et al. '345, to the composition of Dhal et al. WO/97/1318 and use them in forming a hologram based upon the direction to use more than one and that any cationically polymerizable compound(s) would be useful in the composition within the Dhal et al. WO/97/1318 reference, their previous use within the holographic art by Ohe et al. '345 and the direction to the addition of polyfunctional monomers when increased crosslinking is desired in the holographic art by Keys et al. '567.

The applicant argues that the combination of the references does not show the benefit discovered by the applicants, in that minimal shrinkage occurs when difunctional and

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polyfunctional monomers are used. The applicant agrees that using tri or higher functional monomers will rigidify the resulting polymeric structure and that this is well known in polymer technology. The applicant argues that this teaching has nothing to do with the benefits achieved by or problems solved by the applicants. The examiner disagrees, noting that increased crosslinking and the resultant increase in rigidity due to it would be expected to reduce shrinkage as *the more rigid structure would be more resistant to forces acting upon it*. This would be appreciated for polyfunctional monomers irrespective of the mechanism by which the crosslinking occurs. The increased rigidity and reduced shrinkage due to that rigidity would be expected with increased crosslinking for both cationic and free radical polymerization systems. Direction to use increased crosslinking within the art is shown by Keys et al. '567 and as similar enhancement processes are used, would be expected to achieve similar benefits. Additionally, increased refractive index modulation and resistance to abrasion and/or swelling (causing drift of replay wavelength) could reasonably be expected by one skilled in the art. The rejection is maintained.

9 Claims 28-31 and 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dhal et al. WO/97/1318, in view of Ohe et al. '345, Keys et al. '567 and Sato et al. '846

In addition to the basis provided above, the examiner holds that it would have been obvious to use other siloxane compounds known to be useful cationically polymerizable materials, such as those disclosed by Sato et al. '846, in place of those specifically used in the examples of Dhal et al. WO/97/1318 as modified by Ohe et al. '345 and Keys et al. '567 with a reasonable expectation of achieving comparable results and that any cationically polymerizable compound(s) would be useful in the composition within the Dhal et al. WO/97/1318 reference.

10 Claims 28-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dhal et al. WO/97/1318, in view of Ohe et al. '345, Keys et al. '567 and Crivallo et al. J. Polymer Sci. and/or Eckberg et al. EP 0391162.

Crivallo et al. J. Polymer Sci., Vol. 28A pp. 479-503 teaches the use of various epoxy silane compounds including those shown in tables I and II. Useful properties appear in pp 501-503

Eckberg et al. EP 0391162 teaches the use of cationically curable compounds embraced by the formula shown in the abstract and on page 5 with cationic photoinitiators.

In addition to the basis provided above, the examiner holds that it would have been obvious to use other siloxane compounds known to be useful cationically polymerizable materials, such as those disclosed by Crivallo et al. J. Polymer Sci. and/or Eckberg et al. EP 0391162, in place of those specifically used in the examples of Dhal et al. WO/97/1318 as modified by Ohe et al. '345 and Keys et al. '567 with a reasonable expectation of achieving comparable results and that any cationically polymerizable compound(s) would be useful in the composition within the Dhal et al. WO/97/1318 reference.

11 The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Janke et al. '229 teaches the composition of phenol and cresol novolaks (col. 6/41+)

12 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Angebrannndt whose telephone number is (703) 308-4397.

I am normally available between 7:30 AM and 5:00 PM, Monday through Thursday and 7:30 AM and 4:00 PM on alternate Fridays.

If repeated attempts to reach me are unsuccessful, my supervisor may be reached at (703) 308-2464.

Facsimile correspondence should be directed to (703) 305-3599.

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Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.

A handwritten signature in black ink, appearing to read 'M. J. Angebranndt', written in a cursive style.

Martin J. Angebranndt  
Primary Examiner, Group 1750  
January 24, 2003